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“Solidarity in a competing world —
fair use of resources”

Destructive Harvesting of Wild Honey in Miombo Woodlands Affects Keystone Elements in the Ecosystem

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Abstract

Protected areas cover 13% of the world's terrestrial surface. With increasing demands on land and with challenges of land degradation and climate change, conflicts between conservation and use are on the rise, particularly in developing countries. Effective management of these conflicts requires viable livelihood options for local land users which are in line with nature conservation goals. Consolidation of nature conservation guidelines with local land use practices may be particularly challenging where keystone species are affected or where land uses have the potential for leading to ecosystem changes. This can be an issue even in ecosystems like savannahs, where fire largely defines ecosystem structure. The Miombo woodlands, covering around 2.4 million km² of land, harbour important diversity and are crucial for livelihoods of around 75 million people in southern Africa. As a result of various pressures, cover and biomass of Miombo woodlands are declining throughout their range.

Honey harvesting is an important land use in Miombo areas, both economically and culturally. Wild bees use cavities in trees for their colonies. Harvesting practices in some places include felling of trees with honeycombs to collect the honey and setting fire for pacifying bees. This leads to starvation and death of bee colonies. Given that most tree species are bee pollinated, trees with cavities colonised by wild bees can be classified as keystone elements in these ecosystems. Although ecologically far reaching, the effects of this harvesting practice on tree population structures in Miombo woodlands have seldom been studied. We characterised the ecological effects of destructive harvesting of wild honey on tree population structure and tree species distribution in Miombo woodlands in the Niassa wildlife reserve in Mozambique.

The results show that forest structure and tree diversity differed along honey harvesting intensity gradients, with the highest number of fire tolerant tree species in areas with high honey harvesting intensity, which also showed the lowest tree regeneration density and Shannon diversity. Options for reconciling livelihoods with ecosystem maintenance do exist and include non-destructive harvesting based on climbing trees with locally produced ropes and leaving larval combs behind so the colony could continue to grow.

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